CLASS 702, DATA PROCESSING: MEASURING, CALIBRATING, OR TESTING

SECTION I - CLASS DEFINITION

This class provides for apparatus and corresponding methods wherein the data processing system or calculating computer is designed for or utilized in an environment relating to a specific or generic measurement system, a calibration or correction system, or a testing system.

This class is structured into four main parts:

1. Data processing for a measurement system in a specific environment.

2. Data processing for a calibration or correction system.

3. Data processing for a testing system.

4. Data processing for a generic measurement system.

See Subclass References to the Current Class for these specific subclasses.

Scope of the class:

A. MEASUREMENT SYSTEM IN A SPECIFIC ENVIRONMENT

This class is limited to data processing and calculating computer apparatus and corresponding methods for measuring in a specific environment. There must be significant claim recitation of the data processing system, process or calculating computer and nominal recitation of the specific environment. When significant structure of the device or process pertinent to the specific environment is claimed, classification is in the appropriate device or process class. Control system for specific application adapted for a sole purpose of measuring is classified in this class. This class does not includes data processing in combination with a specific application control system for controlling a device or apparatus (see References To Other Classes below for a generic or specific electrical computers and data processing control systems).

B. CALIBRATION OR CORRECTION SYSTEM

This class includes subject matter directed to data processing for calibration or correction system disclosed or claimed in plural art devices such as geometrical instrument, mechanical system, timing apparatus, fluid flow or fluid measurement, etc. (see References To Other Classes below).

C. TESTING SYSTEM

This class includes subject matter directed to data processing for testing system disclosed in plural art devices such as electrical circuit and components testing, sensing apparatus testing, signal converting, shaping or generating (see References To Other Classes below).

This outdent excludes a mere monitoring system for determining performance of a device or process under normal operation without subjecting the device or process to a specific testing procedure or signal.

D. GENERIC MEASUREMENT SYSTEM

This class is limited to data processing and calculating computer apparatus and corresponding methods for measuring that are not strictly adapted to one particular environment. Such apparatus and corresponding methods for measuring could extend to several different applications. There must be significant claim recitation of the data processing system, process or calculating computer. A generic control system adapted for a sole purpose of measuring is classified in this class. This class does not includes data processing in combination with a generic control system for controlling a device or apparatus (see References To Other Classes below for a generic or specific electrical computers and data processing control systems).

SECTION II - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

1, through 84, for data processing for a measurement system in a specific environment.

85, through 107, for a calibration or correction system.

108, through 126, for data processing for a testing system.

127, through 199, for data processing for a generic measurement system.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

29, Metal Working, subclass 25.35 for the electrical measuring, testing or sensing of piezoelectric crystals combined with the manufacture thereof, and subclasses 25.41+ for the electrical measuring, testing or sensing of condensers combined with the manufacture thereof.

33, Geometrical Instruments, appropriate subclasses for geometrical instrument or calibration/correction thereof, subclasses 300+ for magnetic field direction sensing and indicating, and subclasses 700+ for the determination of distance.

73, Measuring and Testing, appropriate subclasses for nonelectrical measuring and testing, instrument calibrating, and for electrical measuring and testing of the following types: gas analysis by electrical thermal determination, subclasses 23.2+; moisture determination by conductivity, subclass 75; stress and strain gauge, subclass 760; surface and cutting edge determination by sliding pick-up subclasses 104+; motor and engine determination (i.e., not merely ignition system), subclasses 116+; liquid level gauge(immersible electrode type, subclass 304, float type, subclasses 305+); fluid pressure (e.g., Pirani type), subclass 755; and speed, subclasses 488+.

100, Presses, subclass 99 for presses having electrical measuring, testing, or sensing means.

166, Wells, appropriate subclasses for well processes or apparatus including measuring or testing means.

177, Weighing Scales, appropriate subclasses, particularly subclasses 25.11+ for weighing apparatus in combination with computer means.

178, Telegraphy, appropriate subclasses, particularly subclass 69 for telegraphy combined with electrical measuring, testing, or sensing.

181, Acoustics, appropriate subclasses for sound wave measurement.

198, Conveyors, subclasses 502.1+ for conveyor combined with alarm or indicator.

205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, appropriate subclasses for electrolysis utilized for electrochemistry and especially subclasses 775+ as the residual home for a process of electrolytic analysis or testing, per se.

209, Classifying, Separating, and Assorting Solids, appropriate subclasses.

250, Radiant Energy, subclass 250 for wave meters for measuring the wavelength of radio or microwaves, subclass 281 for methods and apparatus for ionic separation or analysis, subclasses 302+ for fluorescent and radioactive tracer methods, subclasses 336.1+ for the detection of invisible radiation or the examination of material by invisible radiation using radiant energy responsive electric signalling means, subclasses 428+ for fluent material containing, support, or transfer means with or without an irradiating source or radiating fluent material, subclasses 453.11+ for supports for objects of irradiation, subclasses 458.1+ for luminophor irradiation, subclasses 472.1+ for nonelectric invisible radiation detectors, and subclasses 493.1+ for radiant energy generation and sources.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses, particularly subclass 9 for the subject matter of that class combined with measuring, testing, or sensing.

320, Electricity: Battery or Capacitor Charging and Discharging, subclass 48 for battery charging and discharging systems having indicating, signaling, or testing means.

324, Electricity: Measuring and Testing, appropriate subclasses for testing to determine electrical properties by electrical means, or for determination of non-electrical properties by measuring electric properties, or for the measurement of electricity, per se, particularly subclasses 74+ for calibration of electric meters, subclass 130 for self-calibration, subclasses 200+ for magnetic measuring and testing, subclasses 500+ for fault testing in electrical circuits and components, and subclass 601 for calibration of impedance, admittance, or other quantities representative of electrical stimulus/response relationships.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses, particularly subclasses 100+ for signal converting, shaping, or generating, and subclasses 291+ for clock or pulse waveform generating.

330, Amplifiers, appropriate subclasses, for amplifiers, generally, which may be used in electrical measuring and testing circuits, particularly subclass 2 for amplifier condition testing or measuring.

331, Oscillators, subclass 44 for oscillator systems provided with frequency calibrating or testing means.

340, Communications: Electrical, appropriate subclasses for testing associated with a communication system.

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), appropriate subclasses for reflected or otherwise returned radio wave energy measuring, testing, and sensing systems, such as radar and transponder systems.

348, Television, subclasses 180+ for monitoring, testing, or measuring television signals or apparatus.

356, Optics: Measuring and Testing, for measuring and testing light.

368, Horology: Time Measuring Systems or Devices, subclasses 155+ for time measuring by clocks having electrical features.

374, Thermal Measuring and Testing, appropriate subclasses for a measurement or test of a thermal quantity.

376, Induced Nuclear Reactions: Processes, Systems, and Elements, subclasses 245+ for processes or device for testing, measuring, etc., of a condition of a nuclear reactor during its operation.

378, X-Ray or Gamma Ray System or Devices, appropriate subclasses, particularly subclasses 44+, 51+, or 70+ for X-ray systems used in testing.

379, Telephonic Communications, appropriate subclasses, particularly subclasses 1.01 through 35 for telephone combined with electrical measuring, testing, or sensing.

429, Chemistry: Electrical Current Producing Apparatus, Product and Process, subclasses 90+ for battery having measuring, testing, and indicating means.

434, Education and Demonstration, appropriate subclasses, for electrical measuring, testing, or sensing in combination with education.

455, Telecommunication, appropriate subclasses for radio systems having electrical measuring, testing, or sensing means for indicating the operative condition of the radio system.

505, Superconductor Technology: Apparatus, Material, Process, subclasses 160+ for measuring or testing a system or device, and subclass 310 for a process of measuring or testing a superconductive property.

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 1 through 89 for a data processing generic control system, apparatus, or process; and subclasses 90-306 for a data processing specific application, apparatus, or process.

714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for error detection, correction, recovery or prevention in pulse code data or computers.

SECTION IV - GLOSSARY

CALCULATING OPERATIONS

Arithmetic or some limited logic operations performed upon or with signals representing numbers or values.

DATA PROCESSING

For the purpose of this class, data processing is defined as a systematic operation on data in accordance with a set of rules which results in a significant change in the data.

SUBCLASSES

1 MEASUREMENT SYSTEM IN A SPECIFIC ENVIRONMENT

This subclass is indented under the class definition. Subject matter wherein the data processing system or calculating computer includes a measurement system or process designed for or utilized in a particular art device or application.

SEE OR SEARCH THIS CLASS, SUBCLASS:

85+, for data processing in a calibration or correction of a measurement system.

108+, for data processing in a testing system.

127+, for data processing in a generic measurement system.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, appropriate subclasses.

73, Measuring and Testing, appropriate subclasses for measuring and testing apparatus or processes not found elsewhere.

324, Electricity: Measuring and Testing, appropriate subclasses for measuring or testing electricity, per se.

356, Optics: Measuring and Testing, appropriate subclasses.

358, Facsimile and Static Presentation Processing, subclass 504 for measuring, testing and calibration of natural color facsimile.
368, Horology: Time Measuring System or Devices, appropriate subclasses.
374, Thermal Measuring and Testing, appropriate subclasses.

2 Earth science:
This subclass is indented under subclass 1. Subject matter wherein the measurement system or process is designed for or utilized in an area directed to the earth or its related sciences.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 784 for earth stresses measuring and testing.
405, Hydraulic and Earth Engineering, appropriate subclasses, particularly subclass 258.1 for earth treatment or control.
434, Education and Demonstration, subclasses 130+ for subject matter relating to the teaching of geography.

3 Weather:
This subclass is indented under subclass 2. Subject matter including the study of an atmospheric phenomenon of a region (e.g., rain, storm, snow, wind, etc.).

(1) Note. This subclass includes weather forecasting.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 170.16+ for meteorology.

4 Lightning:
This subclass is indented under subclass 3. Subject matter wherein the atmospheric phenomenon is the flashing of light produced by electricity discharged in the air.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 170.24 for meteorologic electric disturbance (e.g., lighting).
324, Electricity: Measuring and Testing, subclasses 72+ for testing potential in specific environment (e.g., lighting stroke).

5 Topography (e.g., land mapping):
This subclass is indented under subclass 2. Subject matter wherein the related sciences including the study of set of data related to natural or man-made features of an area (e.g., gravity data, terrain data, sea floor, etc.) to present, usually on maps or charts, their relative positions and elevations.

SEE OR SEARCH CLASS:
434, Education and Demonstration, subclasses 130+ for geography, particularly subclasses 150+ for map or terrain model.

6 Well logging or borehole study:
This subclass is indented under subclass 2. Subject matter including a drill rigging apparatus or measuring tool for penetrating an earth formation to form a well bore or for investigating physical condition or a parameter related to the apparatus, the tool, the well bore or the earth formation.

SEE OR SEARCH CLASS:
73, Measuring or Testing, subclasses 152.01+ for bore hole and drilling testing in general.
166, Wells, subclasses 250.01+ for well processes which includes indicating, testing, measuring, or locating, and subclass 66 for well apparatus including electrical signaling means.
175, Boring or Penetrating the Earth, subclasses 40+ for a process or means of measuring combined with an earth boring means.
250, Radiant Energy, subclass 253 for invisible radiant energy detection in geological testing.
324, Electricity: Measuring and Testing, subclasses 323+ for electrical well bore testing.
340, Communications: Electrical, subclasses 853.1+ for telemetering a well bore environment.
367, Communication, Electrical: Acoustic Wave Systems and Devices, subclasses 25+ for well logging, subclasses 81+ for wellbore telemetering, and subclass 86 for borehole testing.

703, Data Processing: Structural Design, Modeling, Simulation, and Emulation, subclass 5 for analog simulator of physical phenomenon and subclass 10 for the simulation of well logging.

7 By induction or resistivity logging tool:
This subclass is indented under subclass 6. Subject matter comprising means having transmitter and receiver coils or electrodes arranged for taking measurements, at various depth of the borehole, representing electrical characteristic of the earth formations or planar layers surrounding the borehole (e.g., conductivity, resistivity, dielectric constant).

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 339+ for induction logging within a borehole.

8 By radiation (e.g., nuclear, gamma, X-ray):
This subclass is indented under subclass 6. Subject matter comprising (a) means for irradiating the earth formation with rays containing radiation particles (i.e., alpha, beta, gamma, neutrons, photon, etc.) such as those in nuclear, gamma, X-ray, etc. and (b) means for detecting and processing resultant signals for logging measurements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
28, for molecular structure or composition determination using radiant energy.
40, for flaw or defect detection using radiant energy.
49, for flow metering using radiant energy.
134+, for a temperature measuring system using radiant energy.
172, for a thickness or width measurement system using radiant energy.

SEE OR SEARCH CLASS:
250, Radiant Energy, appropriate subclasses.
324, Electricity: Measuring and Testing, subclasses 332+ and 344+ for measuring and testing of geophysical surface or subsurface with radiant energy or non-conductive type transmitter and receiver, respectively.

9 Drilling:
This subclass is indented under subclass 6. Subject matter including borehole equipment having a movable tool for penetrating through the subterranean formations of the earth to make a long cylindrical hollow to obtain particular parameters of interest.

(1) Note. This subclass includes measuring-while-drilling (MWD) apparatus in which measurements are received during drilling.

SEE OR SEARCH CLASS:
73, Measuring or Testing, subclass 152.03 for formation logging during drilling, and subclasses 152.43+ for measuring and testing during drilling.
166, Wells, subclasses 250.01+ for well processes which include indicating, testing, measuring, or locating, and subclass 66 for well apparatus including electrical signaling means.
175, Boring or Penetrating the Earth, subclasses 40+ for a process or means of measuring combined with an earth boring means.

10 Dipmeter:
This subclass is indented under subclass 6. Subject matter comprising means for determining a dip angle or dip direction of subsurface formations intercepted by a well borehole.

SEE OR SEARCH THIS CLASS, SUBCLASS:
11, for the determination of physical property related to earth formation.

11 Formation characteristic:
This subclass is indented under subclass 6. Subject matter comprising detail of means for determining physical properties (temperature, pressure, fracture, etc.) related to the earth formations.

SEE OR SEARCH THIS CLASS, SUBCLASS:
10, for dipmeter.

SEE OR SEARCH CLASS:
73, Measuring or Testing, subclasses 152.02+ for formation logging.

166, Wells, subclasses 250.01+ for well processes which include indicating, testing, measuring, or locating, and subclass 66 for well apparatus including electrical signaling means.

175, Boring or Penetrating the Earth, subclass 50 for indicating, testing, or measuring a condition of formation.

12 Fluid flow investigation:

This subclass is indented under subclass 11. Subject matter comprising means for evaluating fluid flow controlling parameters or properties (e.g., porosity, permeability, etc.) related to the nature and movement of a flowing fluid in the well bore or from a potential producing zone in the earth formations.

SEE OR SEARCH THIS CLASS, SUBCLASS:

45+, for flow metering.

50+, for fluid measurement.

100, for calibration of fluid or flow measurement.

114, for testing of a pneumatic or hydraulic system.

SEE OR SEARCH CLASS:

73, Measuring or Testing, subclass 38 for porosity or permeability, and subclasses 152.18+ for flow study in borehole or drilling.

166, Wells, subclass 252.5 for well processes which include determination of permeability or viscosity.

175, Boring or Penetrating the Earth, subclass 50 for indicating, testing, or measuring a condition of formation.

700, Data Processing: Generic Control Systems or Specific Applications, subclass 281 for fluid level or volume control and subclasses 282-285 for flow control.

13 Hydrocarbon prospecting:

This subclass is indented under subclass 12. Subject matter wherein means for evaluating includes means for determining the location or volume of an accumulation of hydrocarbon deposits within the potential producing zone.

14 Seismology:

This subclass is indented under subclass 2. Subject matter comprising means for detecting and recording a seismic reflected or refracted signal representative of earth vibrations.

SEE OR SEARCH CLASS:

181, Acoustics, subclasses 108+ for mechanical seismic sources and detectors and subclass 113 for seismic wave generation.

250, Radiant Energy, subclasses 253+ for geophysical exploration or irradiation by the use of invisible radiant energy.

324, Electricity: Measuring and Testing, subclasses 323+ for geophysical surface or subsurface exploration in situ which includes electrical testing.

367, Communication, Electrical: Acoustic Wave Systems and Devices, subclasses 14+ for geophysical exploration by the use of seismic waves, subclasses 87+ for geophysical exploration by the use of compressional waves and subclasses 140+ for geophysical vibration transducers.

703, Data Processing: Structural Design, Modeling, Simulation, and Emulation, subclass 5 for analog simulator of physical phenomenon.

15 Earthquake or volcanic activity:

This subclass is indented under subclass 14. Subject matter including a seismic strong-motion recording means for monitoring or exploring shaking of the earth or a volcanic phenomenon.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclass 784 for measuring and testing of earth stress.

16 Specific display (e.g., mapping, profiling):

This subclass is indented under subclass 14. Subject matter including (a) means for carrying out a series of steps in a sequence (e.g., mapping, profiling, etc.) to generate a visual presentation of data or (b) structural details of means for displaying data.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5, for topography (e.g.,land mapping).

67+, for display of a measured waveform.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing and Selective Visual Display Systems, appropriate subclasses.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 68+ for display systems in land-reflection type seismic prospecting.

17 Filtering or noise reduction/removal:

This subclass is indented under subclass 14. Subject matter comprising means for removing certain frequency components of the seismic signal or means for lessening or eliminating disturbance in the seismic signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:

111, for a testing system having noise signal stimulus.

191+, for signal extraction or separation including filtering or noise eliminating, and particularly subclass 195 for noise removal or extraction by subtracting noise component.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 551+ for unwanted signal suppression.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 43+ for filters in land-reflection type seismic prospecting.

18 Velocity of seismic wave:

This subclass is indented under subclass 14. Subject matter comprising means for measuring seismic wave parameter over time to compute speed of propagation of seismic wave.

19 Biological or biochemical:

This subclass is indented under subclass 1. Subject matter wherein the data processing system or calculating computer is designed for or utilized in a measurement system directed to an environment of life or chemical compound or process in a living system**.**

SEE OR SEARCH THIS CLASS, SUBCLASS:

22+, for measurement system in chemical environment.

SEE OR SEARCH CLASS:

435, Chemistry: Molecular Biology and Microbiology, appropriate subclasses.

504, Plant Protecting and Regulating Compositions, appropriate subclasses.

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 266 through 274 for chemical process control or monitoring systems.

20 Gene sequence determination:

This subclass is indented under subclass 19. Subject matter including a chemical process which determines genetic information including the chains of a set of sequencing fragments (e.g., DNA sequence information) used to define identity of biological species.

SEE OR SEARCH CLASS:

935, Genetic Engineering: Recombinant DNA Technology, Hybrid or Fused Cell Technology, and Related Manipulations of Nucleic Acids, appropriate subclasses.

21 Cell count or shape or size analysis (e.g., blood cell):

This subclass is indented under subclass 19. Subject matter comprising a measuring means for determining quantity, geometric, or proportional dimensions of a particular biological particle.

SEE OR SEARCH CLASS:

382, Image Analysis, subclasses 133+ for cell analysis, classification, or counting.

22 Chemical analysis:

This subclass is indented under subclass 1. Subject matter including means for analyzing a sample through study of its chemical aspect.

SEE OR SEARCH THIS CLASS, SUBCLASS:

19+, for measurement system in biological or biochemical application.

SEE OR SEARCH CLASS:

71, Chemistry: Fertilizers, appropriate subclasses.

204, Chemistry: Electrical and Wave Energy, appropriate subclasses.

260, Chemistry of Carbon Compounds, appropriate subclasses.

423, Chemistry of Inorganic Compounds, appropriate subclasses.

436, Chemistry: Analytical and Immunological Testing, appropriate subclasses.

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 266 through 274 for chemical process control or monitoring systems.

23 Quantitative determination (e.g., mass, concentration, density):

This subclass is indented under subclass 22. Subject matter comprising means to determine an amount or proportion of a component in the sample.

24 Gaseous mixture (e.g., solid-gas, gas-liquid, gas-gas):

This subclass is indented under subclass 23. Subject matter wherein the component is a constituent in a solid-gas, gas-liquid, or gas-gas mixture.

(1) Note. The constituent may include solid, liquid, or agent gas.

SEE OR SEARCH CLASS:

73, Measuring or Testing, subclasses 23.2+ for gas analysis, and subclasses 19.01+ for gas content of a liquid or solid.

25 Liquid mixture (e.g., solid-liquid, liquid-liquid):

This subclass is indented under subclass 23. Subject matter wherein the component is a constituent that a solid-liquid or a liquid-liquid mixture.

(1) Note. The constituent may include solid or liquid.

SEE OR SEARCH CLASS:

73, Measuring or Testing, subclasses 53.01+ for liquid analysis or analysis of the suspension of solids in a liquid.

26 By particle count:

This subclass is indented under subclass 23. Subject matter wherein the amount or proportion of the component is determined by totalizing quantity of particles in the component.

SEE OR SEARCH CLASS:

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits And Systems, subclasses 1+ for application, particularly subclasses 10+ for field of view contains plural entities or entities scanned plural times, and subclasses 19+ for measuring or testing.

27 Molecular structure or composition determination:

This subclass is indented under subclass 22. Subject matter comprising means to determine structure of a sample on the molecular level or means to identify different components making up an unknown sample.

28 Using radiant energy:

This subclass is indented under subclass 27. Subject matter comprising a radiation source (e.g., X-ray, infrared light source, spectrophotometer) for irradiating the sample with a beam to determine its structure or composition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8, for well logging or borehole by radiation.

40, for flaw or defect detection by radiant energy.

49, for flow metering using radiant energy.

134+, for temperature measuring system by radiant energy.

172, for thickness or width measurement system using radiant energy.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 339.12+ for invisible radiant energy responsive electric signalling using sample absorption for chemical composition analysis.

29 Particle size determination:
This subclass is indented under subclass 22. Subject matter wherein means for analyzing the sample includes means for generating signals having amplitude proportional to the size of respective particles of the sample.

SEE OR SEARCH CLASS:
377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclasses 1+ for application, particularly subclass 11 for field of view contains plural entities or entities scanned plural times including particle size determination variations, and subclasses 19+ for measuring or testing.

30 Chemical property analysis:
This subclass is indented under subclass 22. Subject matter comprising means for determining a chemical characteristic (e.g., specific gravity, conductivity, specific enthalpy, yield, phase, diffusion, etc.) of the sample.

31 Specific operation control system:
This subclass is indented under subclass 22. Subject matter comprising means for controlling internal operation (e.g., memory access, interrupt processing, etc.) or input or output operation of the data processing system or calculating computer**.**

SEE OR SEARCH THIS CLASS, SUBCLASS:
23, for chemical quantitative determination.

32 Specific signal data processing:
This subclass is indented under subclass 22. Subject matter including a signal transforming unit for converting initial measured signal into specified data suitable for displaying or further processing.

SEE OR SEARCH THIS CLASS, SUBCLASS:
189+, for processing of a measured signal.

33 Mechanical measurement system
This subclass is indented under subclass 1. Subject matter wherein the measurement system or process is applicable in the science concerning motion or action of force on body, or the design, construction, operation, and care of mechanical process or structure, or for a solution of a problem in these areas.

SEE OR SEARCH THIS CLASS, SUBCLASS:
105, for calibration of a mechanical system.
113+, for testing of a mechanical system.

SEE OR SEARCH CLASS:
73, Measuring and Testing, appropriate subclasses for mechanical measuring system not found elsewhere.

34 Wear or deterioration evaluation:
This subclass is indented under subclass 33. Subject matter wherein the data processing system or calculating computer is designed for or utilized in the study of an object to measure the impairment of the object due to use, or to estimate life expectancy of the object.

SEE OR SEARCH CLASS:
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 175 and 176 for monitoring of condition of tool or workpiece in a particular manufactured product or operation.

35 Flaw or defect detection:
This subclass is indented under subclass 33. Subject matter wherein the data processing system or calculating computer is designed for or utilized in the study of an object to identify the existence or amount of a fault (e.g., crack or break) of the object.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 592 for pipe flaw detection, subclasses 598 and 600 for flaw or discontinuity

by measured properties of beam, and subclass 865.8 for inspecting.

324, Electricity: Measuring and Testing, subclass 456 for measuring and testing a material property using electrostatic phenomenon for flaw detection, subclass 216 for a magnetic system for flaw testing, and subclass 238 for a plural test magnetic system having induced voltage type sensor for material flaw testing.

356, Optics: Measuring or Testing, subclasses 237+ for inspection for flaws or imperfections.

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 175 through 176 for monitoring of condition of tool (e.g., tool wear) or workpiece in a particular manufactured product or operation

36 Location:

This subclass is indented under subclass 35. Subject matter comprising means for determining position or site of the fault.

SEE OR SEARCH THIS CLASS, SUBCLASS:

59, for determination of an electrical fault location.

37 Video imaging:

This subclass is indented under subclass 35. Subject matter comprising a video signal representing reflected light from the object for identifying the fault.

SEE OR SEARCH THIS CLASS, SUBCLASS:

192, for noise removal or extraction in a video or image signal.

SEE OR SEARCH CLASS:

348, Television, subclasses 125+ for television application system for flaw detecting.

38 Electromagnetic (e.g., eddy current):

This subclass is indented under subclass 35. Subject matter wherein a voltage or current is induced to the device or object to identify the fault.

SEE OR SEARCH CLASS:

324, Electricity: Measuring and Testing, subclasses 222+ for hysteresis or eddy current loss testing.

39 Sound energy (e.g., ultrasonic):

This subclass is indented under subclass 35. Subject matter wherein signal within audible frequency or above that of audible frequency (i.e. between sonic and hypersonic) is used to identify the fault.

SEE OR SEARCH THIS CLASS, SUBCLASS:

48, for acoustic flow metering.

54, for fluid measurement having vibration or acoustic sensor.

159, for dimensional determination by a reflected ultrasonic signal.

171, for determination of thickness or width by ultrasonic.

40 Radiant energy (e.g., X-ray, infrared, laser):

This subclass is indented under subclass 35. Subject matter comprising means for receiving a detected radiation signal (e.g., X-ray, infrared, laser, etc.) transmitted through or reflected from the object.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8, for well logging or borehole by radiation.

28, for molecular structure or composition determination using radiant energy.

49, for flow metering using radiant energy.

134+, for temperature measuring system by radiant energy.

172, for thickness or width measurement system using radiant energy.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 306+ for inspection of solids or liquids by charged particles, and subclasses 492.1+ for irradiation of objects or material.

378, X-Ray or Gamma Ray Systems or Devices, subclasses 58+ for flaw analysis application.

41 Force or torque measurement:
This subclass is indented under subclass 33. Subject matter comprising means to measuring a strength or energy exerted upon a body linearly or angularly.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 379.01+ for muscular force measuring or testing, and subclasses 862+ for dynamometers.

42 Stress or strain measurement:
This subclass is indented under subclass 41. Subject matter wherein the strength or energy causes or tends to cause deformation of the body.

SEE OR SEARCH CLASS:
73, Measuring and Testing, 760+ for specimen stress or strain, or testing by stress or strain application.
356, Optics: Measuring or Testing, subclasses 32+ for material strain analysis.

43 Torsional, shear, tensile, or compression:
This subclass is indented under subclass 42. Subject matter where the strength or energy that causes or tends to cause the deformation of the body includes (1) two opposite angular or linear forces opposing each other at different points in the body for twisting parts of the body or for sliding two contiguous parts of the body relative to each other in the direction parallel to their plane of contact or (2) pressing or pulling forces for reducing or stretching object in size or volume.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 788+ for specimen stress or strain, or testing by stress or strain application by loading of specimen, particularly subclasses 818+ for compressional, 826+ for tensile, 841+ for shear, and 847+ for torsion types.

44 Mechanical work or power measurement:
This subclass is indented under subclass 41. Subject matter comprising means for determining the mechanical work or power resulting from the exerted strength or energy.

45 Flow metering:
This subclass is indented under subclass 33. Subject matter wherein the data processing system or calculating computer is designed for or utilized to determine the amount of a fluid mass or volume passing through a structure (e.g., conduit, pipe) per unit area or time.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12+, for fluid investigation in well logging or borehole.
50+, for fluid measurement.
100, for fluid or fluid flow compensation or correction system.
114, for testing of a pneumatic or hydraulic system.

SEE OR SEARCH CLASS:
73, Measuring and Testing, 861+ for volume or rate of flow measuring and testing.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 281 for fluid level or volume control and subclasses 282-285 for flow control .

46 Count or pulse:
This subclass is indented under subclass 45. Subject matter comprising a pulse generating means for generating a series of pulses or a counter for totalizing a quantity representing the amount of fluid mass or volume flow.

SEE OR SEARCH CLASS:
377, Electrical Pulses Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 21 for the use of electrical pulse counters, dividers, registers in fluid flow measuring or testing.

47 Pressure, resistive or capacitive sensor:
This subclass is indented under subclass 45. Subject matter comprising a transducer means for (1) measuring a pressure (e.g., differential pressure) representing flow at different times or (2) a change in resistance or capacitance representing flow.

SEE OR SEARCH THIS CLASS, SUBCLASS:

52, for fluid measurement system using capacitive sensor.

53, for fluid measurement system using resistive sensor.

SEE OR SEARCH CLASS:

73, Measuring and Testing, 861.42 for volume or rate of flow determination using differential pressure, and subclasses 700+ for fluid pressure gauge.

48 Acoustic:

This subclass is indented under subclass 45. Subject matter wherein the amount of fluid mass or volume flow is determined by sound energy.

SEE OR SEARCH THIS CLASS, SUBCLASS:

54, for fluid measurement having vibration or acoustic sensor.

159, for dimensional determination by a reflected ultrasonic signal.

171, for determination of thickness or width by ultrasonic.

SEE OR SEARCH CLASS:

73, Measuring and Testing, 861.18 for volume or rate of flow determination by vibration or acoustic energy.

49 Radiant energy:

This subclass is indented under subclass 45. Subject matter wherein the amount of fluid mass or volume flow is determined by transmitted beam or light.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8, for well logging or borehole by radiation.

28, for molecular structure or composition determination using radiant energy.

40, for flaw or defect detection by radiant energy.

134+, for temperature measuring system by radiant energy.

172, for thickness or width measurement system using radiant energy.

50 Fluid measurement (e.g., mass, pressure, viscosity):

This subclass is indented under subclass 33. Subject matter wherein the measurement system or process is designed for or utilized to determine a physical property or characteristic of a fluid.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12+, for fluid investigation in well logging or borehole.

45+, for flow metering.

100, for fluid or fluid flow compensation or correction system.

114, for testing of a pneumatic or hydraulic system.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclass 521 for speed, velocity, or acceleration of fluid, and subclass 861.18 for volume or rate of flow determination by vibration or acoustic energy.

700, Data Processing: Generic Control Systems or Specific Applications, subclass 281 for fluid level or volume control and subclasses 282-285 for flow control.

51 Leak detecting:

This subclass is indented under subclass 50. Subject matter comprising means for determining the existence of an opening of a conduit or a container, by fault or mistake, through which the fluid escapes or enters the conduit or the container.

SEE OR SEARCH THIS CLASS, SUBCLASS:

55, for liquid level or volume determination.

SEE OR SEARCH CLASS:

73, Measuring and Testing, 40+ for leakage.

700, Data Processing: Generic Control Systems or Specific Applications, subclass 281 for fluid level or volume control.

52 Capacitive sensor:
This subclass is indented under subclass 50. Subject matter wherein the physical property or characteristic of the fluid is determined by measuring capacitance variances of a probe.

SEE OR SEARCH THIS CLASS, SUBCLASS:
47, for flow metering using pressure, resistive or capacitive sensor.

53 Resistive sensor:
This subclass is indented under subclass 50. Subject matter wherein the physical property or characteristic of the fluid is determined by measuring change in resistance of a probe.

SEE OR SEARCH THIS CLASS, SUBCLASS:
47, for flow metering using pressure, resistive, or capacitive sensor.

54 Acoustic or vibration sensor:
This subclass is indented under subclass 50. Subject matter wherein the physical property or characteristic of the fluid is determined using a probe having an acoustic impedance or a vibratable structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
48, for flow metering using acoustic energy.
56, for vibration detection.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 570+ for vibration measuring and testing.

55 Liquid level or volume determination:
This subclass is indented under subclass 50. Subject matter comprising means for determining a height of a fluid column or a cubic units of a fluid space in a container.

SEE OR SEARCH THIS CLASS, SUBCLASS:
51, for leak detecting in a fluid measurement system.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 149 for volumetric content measuring, and subclass 290 for liquid level or depth gauge.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 281 for fluid level or volume control.

56 Vibration detection:
This subclass is indented under subclass 33. Subject matter including a transducer means for detecting vibrational signal of a structure in response to an excitation test performed on the structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
54, for fluid measurement system using acoustic or vibration sensor.

SEE OR SEARCH CLASS:
73, Measuring and Testing, 861.18 for volume or rate of flow determination by vibration or acoustic energy.

57 Electrical signal parameter measurement system:
This subclass is indented under subclass 1. Subject matter wherein the measurement system or process is designed for or utilized to measure an electrical parameter.

SEE OR SEARCH THIS CLASS, SUBCLASS:
189+, for generic measured signal processing.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, appropriate subclasses for the measuring or testing of electrical properties where significant structure to the electrical measuring or testing device is claimed.
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 286 through 298 for power generation or distribution system.

58 For electrical fault detection:
This subclass is indented under subclass 57. Subject matter including means for determining the presence of a defect or disturbance in an electrical component, equipment, or line.

SEE OR SEARCH THIS CLASS, SUBCLASS:
- 63, for battery monitoring.
- 106, for signal frequency or phase correction.
- 107, for circuit tuning.
- 183+, for diagnostic analysis in a performance or efficiency evaluation system.
- 191+, for noise removal or suppression.

SEE OR SEARCH CLASS:
- 324, Electricity: Measuring and Testing, 500+ for fault detecting in electric circuits and of electric components.
- 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 292 through 294 for system protection in a power generation or distribution system.
- 714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for error detection, correction, recovery or prevention in pulse code data or computers, especially subclasses 712+ for transmission facility testing.

59 Fault location:
This subclass is indented under subclass 58. Subject matter having means to identify an address or orientation of the defect or disturbance.

SEE OR SEARCH THIS CLASS, SUBCLASS:
- 185, for cause or fault identification in a performance or efficiency evaluation system.

SEE OR SEARCH CLASS:
- 324, Electricity: Measuring and Testing, subclasses 512+ for fault location detecting in electric circuits and of electric components.

60 Power parameter:
This subclass is indented under subclass 57. Subject matter wherein the measured electrical parameter comprises a dissipated or developed electrical energy expressible in a unit of watt or watt-hour.

SEE OR SEARCH CLASS:
- 324, Electricity: Measuring and Testing, subclass 74 for testing or calibration of watt-hour meters, and subclasses 140+ for plural inputs (e.g., summation, ratio).
- 700, Data Processing: Generic Control Systems or Specific Applications, subclasses 286 through 298 for measuring and controlling in a power generation or distribution system.
- 713, Electrical Computers and Digital Processing Systems: Support, subclass 340 for computer power source monitoring.

61 Power logging (e.g., metering):
This subclass is indented under subclass 60. Subject matter having means for recording the dissipated or developed electrical energy over a continuous interval.

SEE OR SEARCH THIS CLASS, SUBCLASS:
- 176+, for time keeping in a time duration or rate measurement system.
- 180, for histogram distribution in statistical measurements.
- 187, for history logging or time stamping in a generic measurement system.

SEE OR SEARCH CLASS:
- 324, Electricity: Measuring and Testing, subclass 113 for recording of measured or tested electricity, per se.
- 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, subclass 412 for utility usage cost or price determination.

62 Including communication means:
This subclass is indented under subclass 61. Subject matter including transmitting or receiving means connecting the means for recording with an external or remote location for transmitting or receiving information or data.

SEE OR SEARCH THIS CLASS, SUBCLASS:

122, for a testing system including specific communication means.

188, for remote supervisory monitoring.

SEE OR SEARCH CLASS:

340, Communications: Electrical, appropriate subclasses, especially subclasses 870.01+ for continuously variable indicating (e.g., telemetering).

63 Battery monitoring:

This subclass is indented under subclass 60. Subject matter wherein the measured electrical parameter is related to a condition or a state of charge (e.g., temperature, life-state, voltage, charging, or discharging current) of a battery or a series of batteries.

(1) Note. This subclass does not include recharging of battery.

SEE OR SEARCH THIS CLASS, SUBCLASS:

58, for electrical fault detection.

SEE OR SEARCH CLASS:

320, Electricity: Battery or Capacitor Charging and Discharging, subclasses 127+for battery or cell discharging and subclasses 137+ for battery or cell charging, particularly subclass 134 for battery or cell condition monitoring (e.g., for protection from overcharging, heating, etc.).

324, Electricity: Measuring and Testing, subclasses 425+ for electrolyte properties.

340, Communications: Electrical, subclasses 636.1 through 636.21 for a battery condition responsive indicating system.

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 292 through 294 for system protection in a power generation or distribution system.

64 Voltage or current:

This subclass is indented under subclass 57. Subject matter wherein the measured electrical parameter comprises voltage or current.

(1) Note. This subclass includes a system or method used solely to measure voltage or current. The subclass excludes a system or method which measure voltage or current for the purpose of determining a power parameter, a fluid or flow parameter, or any other purpose.

SEE OR SEARCH CLASS:

324, Electricity: Measuring and Testing, subclasses 76.11+ for measuring, testing or sensing electricity, per se.

340, Communications: Electrical, subclasses 660+ and 664 for a voltage and current responsive indicating system.

65 Including related electrical parameter:

This subclass is indented under subclass 64. Subject matter including means for measuring electrical parameter theoretically related to voltage or current by formulae (e.g., impedance, resistance, capacitance, inductance, etc.).

SEE OR SEARCH CLASS:

324, Electricity: Measuring and Testing, subclasses 600+ for impedance, admittance, or other quantities representative of electrical stimulus/response relationships.

66 Waveform analysis:

This subclass is indented under subclass 57. Subject matter including means for determining value or parameter of a shape of an electrical wave.

SEE OR SEARCH THIS CLASS, SUBCLASS:

112, for a testing system for determining transfer function in which a sinusoidal signal is used as a stimulus.

124, for signal generation or waveform shaping in a testing system.

SEE OR SEARCH CLASS:

324, Electricity: Measuring and Testing, subclasses 76.12+ for analysis of complex waves.

67 Display of waveform:
This subclass is indented under subclass 66. Subject matter including (a) means for carrying out a series of steps to generate a visual presentation of the electrical wave or (b) structural details of means for displaying the electrical wave.

SEE OR SEARCH THIS CLASS, SUBCLASS:
16, for specific display of a seismic waveform.

SEE OR SEARCH CLASS:
345, Computer Graphics Processing and Selective Visual Display Systems, subclass 441 for waveform display.

68 Having specified user interface (e.g., marker, menu):
This subclass is indented under subclass 67. Subject matter comprising operator input control means (e.g., marker on waveform, menu driven interface, specific keyboard configuration, etc.) for allowing an interaction between an operator and means for displaying the electrical wave.

SEE OR SEARCH THIS CLASS, SUBCLASS:
120, for testing of circuits including input selection.

SEE OR SEARCH CLASS:
345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 156+ for peripheral interface input devices.

69 Signal quality (e.g., timing jitter, distortion, signal-to-noise ratio):
This subclass is indented under subclass 66. Subject matter comprising means for determining or estimating an impairment in the electrical wave (e.g., timing jitter, distortion, signal to noise ratio, etc.).

(1) Note. This subclass does not include noise reduction.

SEE OR SEARCH THIS CLASS, SUBCLASS:
106, for signal frequency or phase correction.
124+, for signal generation or waveform shaping in a testing system.
190+, for signal extraction or separation.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 620+ for measuring and testing of distortion.

70 Waveform extraction:
This subclass is indented under subclass 66. Subject matter comprising means for withdrawing a particular waveform from an incoming electrical wave by subjecting the incoming electrical wave to a specific separating technique (e.g., filtering).

(1) Note. This subclass includes means or a procedure to extract information from a noise background.

SEE OR SEARCH THIS CLASS, SUBCLASS:
74, for means for identifying a particular signal within a signal without extraction.
190+, for processing of a measured signal including signal extraction or separation.

71 Waveform-to-waveform comparison:
This subclass is indented under subclass 66. Subject matter including means for distinguishing or matching a first waveform to a second waveform.

(1) Note. The first and the second waveform can be discrete portions of a continuous wave.

SEE OR SEARCH THIS CLASS, SUBCLASS:
193, for processing of a measured signal including noise removal or extraction by threshold comparison.

72 Phase comparison:
This subclass is indented under subclass 71. Subject matter comprising means for comparing a phase of the first waveform to that of the second waveform, or to a reference phase of a reference signal.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 76.52+ for frequency of cyclic current or voltage by phase comparison, and subclasses 76.77+ for phase comparison between waveforms.

73 Identification of waveform:
This subclass is indented under subclass 71. Subject matter comprising means for classifying an acquired input waveform which is unknown by correlating or comparing its characteristics with those of at least one known or reference waveform.

(1) Note. This subclass includes pulse converting or classifying apparatus.

74 Signal-in-signal determination:
This subclass is indented under subclass 71. Subject matter comprising means for detecting the presence or absence of at least one specified signal contained within other signal (e.g., noise superimposed on an information signal, burst signal, tone signal, or certain frequencies within a pulse code modulated signal).

SEE OR SEARCH THIS CLASS, SUBCLASS:
70, for signal extraction wherein a particular signal is identified and extracted without comparison.
75+, for means to determine or analyze frequency of electric wave.
190+, for processing of a measured signal including signal extraction or separation.

75 Frequency:
This subclass is indented under subclass 66. Subject matter having means for determining or analyzing frequency of the electromagnetic wave.

SEE OR SEARCH THIS CLASS, SUBCLASS:
70, for waveform extraction.
71, for waveform to waveform comparison including frequency correlator or comparison.
74, for means to determine the presence or absence of a specified signal contained within other signal.
190+, for processing of a measured signal including filtering.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 76.39+ for the measuring of frequency.

76 Frequency spectrum:
This subclass is indented under subclass 75. Subject matter wherein frequencies of interest of a complex waveform having multi-frequency components are determined or analyzed**.**

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 76.19+ for frequency spectrum analyzer.

77 Using Fourier method:
This subclass is indented under subclass 76. Subject matter wherein the frequency spectrum is analyzed or determined using Fourier analysis or Fourier transform technique.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclass 76.21 for frequency spectrum analysis by Fourier analysis.

78 By count (e.g., pulse):
This subclass is indented under subclass 75. Subject matter including a counter means for counting pulses, zero-crossing, etc. to determine the frequency of the electromagnetic wave.

SEE OR SEARCH CLASS:
377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclasses 19+ for the application of counters, dividers, or registers for measuring or testing.

79 Time-related parameter (e.g., pulse width, period, delay, etc.):
This subclass is indented under subclass 57. Subject matter including means for generating time-related measurement (e.g., pulse width, period, delay) of at least one electrical signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
89, for calibration of a timer or correction of timing related error in measurement data.
125, for a testing system in which a signal is generated for system timing purposes.
176+, for a time duration or rate measurement system.
187, for history logging or time stamping.

SEE OR SEARCH CLASS:
700, Data Processing: Generic Control Systems or Specific Applications, subclass 306 for control based on an elapsed time.

80 Specified memory location generation for storage:
This subclass is indented under subclass 57. Subject matter including means for generating address of storage for the measured electrical parameter.

SEE OR SEARCH CLASS:
711, Elecrical Computers and Digital Processing Systems: Memory, subclasses 200+ for address formation.

81 Quality evaluation:
This subclass is indented under subclass 1. Subject matter comprising means for gathering data, usually on a manufacturing or assembly line, to determine the quality of a product.

SEE OR SEARCH THIS CLASS, SUBCLASS:
182+, for performance or efficiency evaluation in a generic measurement system.

SEE OR SEARCH CLASS:
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 108 through 111 for performance monitoring of a product assembly or manufacturing with significant recitation of how the product is assembled or manufactured.

82 Having judging means (e.g., accept/reject):
This subclass is indented under subclass 81. Subject matter including a judging means responsive to the gathered data to make a decision on the status of the product (e.g., accept/reject; pass/fail; in/out of tolerance; good/bad).

83 Sampling Inspection Plan:
This subclass is indented under subclass 81. Subject matter wherein means for gathering data comprises details of a specifically defined plan created for the gathering of data related to the product.

84 Quality control:
This subclass is indented under subclass 81. Subject matter wherein the gathered data is evaluated and fed back to regulate (e.g., adjust, maintain, etc.) the manufacturing or assembly line to ensure a desired quality.

SEE OR SEARCH CLASS:
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 109 and 110 for quality control in product assembly or manufacturing with significant recitation of how the product is assembled or manufactured.

85 CALIBRATION OR CORRECTION SYSTEM:
This subclass is indented under the class definition. Subject matter wherein the data processing or calculating means includes a system or process for adjusting a measuring instrument or for revising measurement data to obtain more accurate or concise measurement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
1+, for data processing in a specific measurement system.
108+, for data processing in a testing system.
127+, for data processing in a generic measurement system.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 1.01+ for instrument proving or calibrating.

250, Radiant Energy, subclass 252.1 for calibration of radiant energy system.

324, Electricity: Measuring and Testing, subclass 202 for magnetic calibration, subclass 601 for calibration of impedance, admittance or other quantities representative of electrical stimulus/response relationships, subclasses 74+ for testing or calibrating of electric meters, and subclass 130 for self-calibration.

340, Communications: Electrical, subclass 870.04 and 870.05 for telemetering of information with calibration or calculation means, respectively, where specific structure to the telemetering means must be claimed.

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 165+ for testing or calibration of a radar system.

358, Facsimile and Static Presentation Processing, subclass 504 for measuring, testing and calibration of natural color facsimile.

86 Linearization of measurement:

This subclass is indented under subclass 85. Subject matter comprising means for reforming non-linear measurement signal to conform to a desired linear characteristic.

SEE OR SEARCH CLASS:

708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 100 through 714 and 800-854 for digital or analog linearization means, respectively.

87 Zeroing (e.g., null):

This subclass is indented under subclass 85. Subject matter comprising means correcting a drift or an offset error from a null point or a baseline.

SEE OR SEARCH THIS CLASS, SUBCLASS:

88, for zero-full scaling.

101+, for calibration or correction of a weighing system.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclass 307 for baseline or DC offset correction.

356, Optics: Measuring and Testing, subclass 228 for calibration of a photoelectric moveable scale.

88 Zero-full scaling:

This subclass is indented under subclass 85. Subject matter comprising means for correcting a range (e.g., from a minimum to a maximum value) of magnitudes of the measurement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

87, for zeroing or null correction.

101+, for calibration or correction of a weighing system.

SEE OR SEARCH CLASS:

356, Optics: Measuring and Testing, subclass 228 for calibration of a photoelectric moveable scale.

89 Timing (e.g., delay, synchronization):

This subclass is indented under subclass 85. Subject matter comprising means for adjusting a timer or for correcting a timing-related error in the measurement data.

SEE OR SEARCH THIS CLASS, SUBCLASS:

79, for the determination of a time-related parameter in an electrical signal parameter measurement system.

125, for a testing system in which a signal is generated for system timing purposes.

176+, for a time duration or rate measurement system.

187, for history logging or time stamping.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 1.42+ for proving or calibrating of timing apparatus.

368, Horology: Time Measuring Systems or Devices, subclasses 184+ for regulating means for horology apparatus.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 306 for control based on an elapsed time.

90 Error due to component compatibility:
This subclass is indented under subclass 85. Subject matter comprising means for correcting errors that arise from components having different performance characteristics in a single measuring system.

91 Having interchangeable sensors or probes:
This subclass is indented under subclass 90. Subject matter wherein errors that arise from using different sensors or probes are corrected by using stored calibration information corresponding to respective plug-in sensors or probes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
47, for flow metering having pressure, resistive, or capacitive sensor.
52, for a fluid measurement system having a capacitive sensor.
53, for a fluid measurement system having a resistive sensor.
54, for a fluid measurement system having a vibration or acoustic sensor.
93, for calibration of a directional system using a sensor.
104, for calibration of a sensor or transducer.
116, for testing of a sensing device.

92 Direction (e.g., compass):
This subclass is indented under subclass 85. Subject matter including means to calibrate or correct components or output measurement data of a direction indicating system comprising at least a sensing means (e.g., gyro, geomagnetic field sensor, cross coil type indicator, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:
150+, for an orientation or position measurement system.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclass 326 for selective correction for deviation of gyromagnetic compass, and subclass 502 for geometrical instruments with a calibration device or gauge for a nuclear reactor element.
73, Measuring and Testing, subclass 1 for calibration of angle or direction sensors.

93 By another sensor:
This subclass is indented under subclass 92. Subject matter wherein the calibration or correction is performed based on measurements of a secondary sensor.

SEE OR SEARCH THIS CLASS, SUBCLASS:
47, for flow metering having a pressure, resistive, or capacitive sensor.
52, for a fluid measurement system having a capacitive sensor.
53, for a fluid measurement system having a resistive sensor.
54, for a fluid measurement system having a vibration or acoustic sensor.
91, for calibration of a component compatibility error in a system having interchangeable sensors or probes.
104, for calibration of a sensor or transducer.
116, for testing of a sensing device.

94 Position measurement:
This subclass is indented under subclass 85. Subject matter comprising means to calibrate or correct components or output displacement data of a position measuring instrument.

SEE OR SEARCH THIS CLASS, SUBCLASS:
150+, for an orientation or position measurement system.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclass 320 for gyroscopically controlled or stabilized geos:graphic position indication.

95 Coordinate positioning:
This subclass is indented under subclass 94. Subject matter comprising means for determining or correcting coordinates identifying the position.

96 Speed:
This subclass is indented under subclass 85. Subject matter comprising means to calibrate or correct components or output speed data of a speed measuring instrument.

SEE OR SEARCH THIS CLASS, SUBCLASS:
18, for determination of velocity of a seismic wave.
142+, for a speed measurement system.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 2 for proving or calibrating of a speedometer.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 304 for a specific application of speed responsive control system.

97 Length, distance, or thickness:
This subclass is indented under subclass 85. Subject matter comprising means to calibrate or correct length, distance, or thickness gauge or signal representing such measurement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
155+, for a dimensional determination system.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclass 702 for error compensation for distance measuring.
73, Measuring and Testing, subclasses 1.79+ for calibration of displacement, motion, distance, or position measuring device.
342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 165+ for testing or calibrating of a radar system.
356, Optics: Measuring and Testing, subclass 6 for instrument condition testing or indicating.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 303 for specific application of dimensional responsive control system.

98 Pressure:
This subclass is indented under subclass 85. Subject matter comprising means to calibrate or correct force per unit area measurement instrument or signal representing such measurement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
47, for flow metering using a pressure sensor.
50+, for fluid parameter (e.g., mass, pressure, viscosity) measurement.
138+, for a pressure measurement system.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 157+ for fluid pressure instrument proving or calibrating with signal correction or processing, and subclasses 708 for fluid pressure gauge with pressure or temperature compensation.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 301 for a specific application of pressure responsive control system.

99 Temperature:
This subclass is indented under subclass 85. Subject matter comprising means to calibrate or correct temperature sensors or gauges or signal representing such measurement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
130+, for a temperature measurement system.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 708 for fluid pressure gauge with pressure or temperature compensation.

374, Thermal Measuring and Testing, subclasses 1+ for a thermal calibration system.

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 276 through 278 for HVAC control and subclasses 299 and 300 for specific application of temperature responsive control systems.

100 Fluid or fluid flow measurement:

This subclass is indented under subclass 85. Subject matter comprising means to calibrate or correct fluid or fluid flow measuring instrument or signal representing such measurement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12+, for fluid investigation in earth formation of a well logging or borehole measurement system.

45+, for flow metering.

50+, for fluid measurement.

114, for testing of a pneumatic or hydraulic system.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 1.16+ for instrument proving or calibrating of volume or flow, speed of flow, volume rate of flow, or mass rate of flow, subclasses 1.57+for fluid pressure instrument proving or calibrating with signal correction or processing, and subclasses 1.73+ for calibration of a liquid level and volume measuring device.

700, Data Processing: Generic Control Systems or Specific Applications, subclass 281 for control of fluid level or volume and subclasses 282-285 for flow control.

101 Weight:

This subclass is indented under subclass 85. Subject matter comprising means to calibrate or correct weight scale or weight measurement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

129, for article count or size distribution by weight.

173+, for a weight measurement system.

SEE OR SEARCH CLASS:

177, Weighing Scales, subclasses 25.11+ for a weighing scale with computer means.

356, Optics: Measuring and Testing, subclass 228 for a calibration of a photoelectric moveable scale.

700, Data Processing: Generic Control Systems or Specific Applications, subclass 305 for specific application of weight responsive control systems.

102 Tare weight adjusted:

This subclass is indented under subclass 101. Subject matter comprising an operation for obtaining a net weight.

SEE OR SEARCH THIS CLASS, SUBCLASS:

87, for zeroing calibration or correction.

88, for zero-full scaling.

103 Acoustic:

This subclass is indented under subclass 85. Subject matter comprising means to calibrate or correct sound wave measuring instrument or signal representing such measurement.

SEE OR SEARCH THIS CLASS, SUBCLASS:

48, for acoustic flow metering.

54, for fluid measurement having vibration or acoustic sensor.

159, for dimensional determination by a reflected ultrasonic signal.

SEE OR SEARCH CLASS:

181, Acoustics, appropriate subclasses for sound generating or modifying apparatus, per se.

104 Sensor or transducer:

This subclass is indented under subclass 85. Subject matter wherein a sensing element that usually converts some physical parameter into an electrical signal or a sensed physical quantity is calibrated or corrected.

SEE OR SEARCH THIS CLASS, SUBCLASS:

47, for flow metering having a pressure, resistive, or capacitive sensor.

52, for a fluid measurement system having a capacitive sensor.
53, for a fluid measurement system having a resistive sensor.
54, for a fluid measurement system having a vibration or acoustic sensor.
91, for correction of a component compatibility error in a system having interchangeable sensors or probes.
93, for calibration of a directional system using a sensor.
116, for testing of a sensing device.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 1.59+for fluid pressure instrument proving or calibrating with signal correction or processing, subclasses 1.75+ for calibration of angle, direction, or inclination sensors, and subclasses 1.79+ for calibration of a displacement, motion, distance, or position sensor.

105 For mechanical system:
This subclass is indented under subclass 85. Subject matter including means for compensating error in a machine or a mechanical body.

SEE OR SEARCH THIS CLASS, SUBCLASS:
33+, for a measurement system in a mechanical application.
113+, for testing of a mechanical system.

SEE OR SEARCH CLASS:
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 275 through 285 for a mechanical control system.

106 Signal frequency or phase correction:
This subclass is indented under subclass 85. Subject matter comprising means to calibrate or correct a frequency or phase measuring system or signal representing such measurement.

SEE OR SEARCH THIS CLASS, SUBCLASS:
72, for phase comparison of waveforms.
75+, for frequency measurement system.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclass 601 for calibration of quantities representative of electrical stimulus/response relationships.

107 Circuit tuning (e.g., potentiometer, amplifier):
This subclass is indented under subclass 85. Subject matter including means for calibrating an electronic circuit device or component (e.g., amplifier, counter, potentiometer, converter, transformer, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:
117+, for testing of a circuit.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclass 601 for calibration of quantities representative of electrical stimulus/response relationships.

108 TESTING SYSTEM:
This subclass is indented under the class definition. Subject matter wherein the data processing or calculating means includes a test means for determining a response of a device or a process to an external stimulus.

(1) Note. A mere monitoring system for determining performance of a device or process under normal operation without subjecting the device or process to a specific testing procedure or signal is excluded from this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
1+, for data processing in a specific measurement system.
85+, for data processing in a calibration or correction of measurement system.
127+, for data processing in a generic measurement system.

SEE OR SEARCH CLASS:
73, Measuring and Testing, appropriate subclasses for measuring and testing apparatus or processes not found elsewhere.

324, Electricity: Measuring and Testing, appropriate subclasses for measuring or testing electricity, per se.
356, Optics: Measuring and Testing, appropriate subclasses, particularly subclass 72 for optical measuring and testing with plural diverse test or art, subclass 73 for plural test, and subclasses 128+ for refraction testing.
358, Facsimile and Static Presentation Processing, subclass 504 for measuring, testing, and calibration of natural color facsimile.
374, Thermal Measuring and Testing, subclasses 45+ for thermal testing of non-thermal quantity.

109 For transfer function determination:
This subclass is indented under subclass 108. Subject matter comprising means for determining a relationship between a stimulus and response of an element or a network to the stimulus.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 615+ for transfer function-type characteristic calibration.

110 Binary signal stimulus (e.g., pulse):
This subclass is indented under subclass 109. Subject matter wherein the stimulus is a two-level test signal.

111 Noise signal stimulus (e.g., white noise):
This subclass is indented under subclass 109. Subject matter wherein the stimulus is a noise signal (e.g., random noise).

SEE OR SEARCH THIS CLASS, SUBCLASS:
17, for filtering or noise reduction in a seismic prospecting system.
191+, for noise removal or extraction in a measured signal, particularly subclass 195 for noise removal or extraction by subtracting a noise component.

112 Sinusoidal signal stimulus:
This subclass is indented under subclass 109. Subject matter wherein the stimulus is a sine or cosine waveform.

SEE OR SEARCH THIS CLASS, SUBCLASS:
66+, for wave form analysis.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 72+ for testing potential in a specific environment, subclasses 76.11+ for testing of electricity, per se, and particularly subclasses 76.12+ for an analysis of complex waves.

113 Of mechanical system:
This subclass is indented under subclass 108. Subject matter wherein the test means is applied to a device or process in the science concerning design, construction, operation, or care of a mechanical process or structure, or for a solution of a problem in these areas.

SEE OR SEARCH THIS CLASS, SUBCLASS:
33+, for a measurement system in a mechanical application.
105, for mechanical system calibration or correction.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 11.01+ for testing an impact delivering device (e.g., a hammer), subclasses 11.04+ for testing of a shock absorbing device (e.g., automobile shock absorber, gun recoil apparatus, etc.), subclasses 12.01+ for testing by impact or shock, subclass 52 for testing a sealed receptacle, subclasses 104+ for surface or cutting edge testing, subclasses 116+ for motor or engine testing, subclasses 121+ for brake testing, subclasses 760+ for stress or strain testing, subclass 865.3 for testing by imparting motion, subclass 865.9 for testing of apparatus, and subclass 866 for testing of material.
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 275 through 285 for a mechanical control system.

114 Pneumatic or hydraulic system:
This subclass is indented under subclass 113. Subject matter wherein the mechanical process or structure is in the science that deals with mechanical properties of gas or practical application of liquid in motion.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12+, for fluid investigation in earth formation of a well logging or borehole measurement system.
45+, for flow metering.
50+, for fluid measurement.
100, for calibration or correction of fluid or fluid flow measurement.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclass 1.68 for measuring or testing of blower, pump, and hydraulic equipment.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 281 for control of fluid level or volume and subclasses 282-285 for flow control.

115 Electromechanical or magnetic system:
This subclass is indented under subclass 114. Subject matter wherein the mechanical process or structure is controlled or actuated electrically or magnetically.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 200+ for magnetic measuring and testing.

116 Of sensing device:
This subclass is indented under subclass 108. Subject matter wherein the test signal or procedure is applied to a sensor means which produces an electrical output signal proportional to a time varying quantity.

SEE OR SEARCH THIS CLASS, SUBCLASS:
47, for flow metering having a pressure, resistive, or capacitive sensor.
52, for a fluid measurement system having a capacitive sensor.
53, for a fluid measurement system having a resistive sensor.
54, for a fluid measurement system having vibration or acoustic sensor.
91, for correction of component compatibility error in a system having interchangeable sensors or probes.
93, for calibration of a directional system by sensor.
104, for calibration or correction of a sensor or transducer.

SEE OR SEARCH CLASS:
73, Measuring and Testing, appropriate subclasses, particularly subclasses 649+ for measuring and testing apparatus comprising a sensing device for sensing vibration or analysis thereof.

117 Of circuit:
This subclass is indented under subclass 108. Subject matter wherein the test means is applied to the interconnection of electronic components in a closed path.

SEE OR SEARCH THIS CLASS, SUBCLASS:
107, for circuit tuning.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 500+ for fault testing in electrical circuits and components, particularly subclasses 537+ for fault testing of individual circuit component or element, subclass 538 for fault testing of electrical connectors, subclasses 765+ for a fault testing of a semiconductor device, subclass 771 for fault testing of a power supply, subclass 726 for transformer testing, subclass 727 for piezoelectric crystal testing, and subclasses 74+ for testing and calibration of electric meters.

118 Testing multiple circuits:
This subclass is indented under subclass 117. Subject matter wherein a plurality of circuits are tested simultaneously or selectively.

(1) Note. This subclass includes a count of a tested object (e.g., good wafers, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:
121, for a testing system having multiple test instruments.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclass 73.1 for plural, automatically sequential tests, and subclass 227 for magnetic plural tests.

119 Including program initialization (e.g., program loading) or code selection (e.g., program creation):
This subclass is indented under subclass 117. Subject matter including initialization means for executing a program or preparing code selection.

SEE OR SEARCH THIS CLASS, SUBCLASS:
123, for a testing system including program set up.

120 Including input means:
This subclass is indented under subclass 117. Subject matter comprising an input device for designating a test mode, or an input or output selection (e.g., switchboard with multiple input selection).

SEE OR SEARCH THIS CLASS, SUBCLASS:
68, for a display of an analyzed waveform having a specified user interface.

121 Including multiple test instruments:
This subclass is indented under subclass 108. Subject matter including a plurality of test instruments.

(1) Note. This subclass includes an automatic test system having interchangeable test devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
118, for testing multiple circuits.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclass 73.1 for plural, automatically sequential tests, and subclass 227 for magnetic plural tests.

122 Including specific communication means:
This subclass is indented under subclass 108. Subject matter including details of data transmission or exchange.

SEE OR SEARCH THIS CLASS, SUBCLASS:
62, for power logging including communication means.
188, for remote supervisory monitoring.

SEE OR SEARCH CLASS:
340, Communications: Electrical, appropriate subclasses for a generic electrical communication apparatus, per se.

123 Including program set up:
This subclass is indented under subclass 108. Subject matter including means for selecting or specifying an executable program of system software to configure a testing system or to produce desired output of the testing system.

SEE OR SEARCH THIS CLASS, SUBCLASS:
119, for testing of circuit including program loading or program creation.

124 Signal generation or waveform shaping:
This subclass is indented under subclass 108. Subject matter wherein the test means includes means for generating a specific type of signal or signal having a specific waveform.

SEE OR SEARCH THIS CLASS, SUBCLASS:
70, for waveform extraction.
190+, for processing of a measured signal including signal extraction or separation.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits and Systems, subclasses 100+ for signal converting, shaping, or generating.

125 Timing signal:

This subclass is indented under subclass 124. Subject matter wherein the signal is generated for system timing purposes (e.g., trigger pulses, synchronizing signal, system clock pulses).

SEE OR SEARCH THIS CLASS, SUBCLASS:

79, for the determination of a time-related parameter in an electrical signal parameter measurement system.

89, for a timing calibration or correction system.

176+, for a time duration or rate measurement system.

187, for history logging or time stamping.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits and Systems, subclasses 291+ for clock or pulse waveform generating.

700, Data Processing: Generic Control Systems or Specific Applications, subclass 306 for control based on an elapsed time.

713, Electrical Computers and Digital Processing Systems: Support, subclass 400 and 401 for synchronization of clock or timing signals, data, or pulses; and subclasses 500-503 for clock, pulse, or timing signal generation or analysis.

126 Signal conversion:

This subclass is indented under subclass 124. Subject matter comprising means for converting an input signal having a certain characteristic to another signal having a different characteristic.

SEE OR SEARCH THIS CLASS, SUBCLASS:

198, for measurement conversion processing in which measuring unit is converted from one to an another.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits and Systems, subclass 101 for converting input current or voltage to output frequency, subclass 102 for converting input frequency to output current or voltage, subclass 103 for converting input voltage to output current or vice versa, subclass 104 converting, per se, of an AC input to corresponding DC at an unloaded output, and subclasses 113+ for frequency or repetition rate conversion or control.

127 MEASUREMENT SYSTEM:

This subclass is indented under the class definition. Subject matter wherein data processing and calculating computer includes a generic measurement system or process.

SEE OR SEARCH THIS CLASS, SUBCLASS:

1+, for data processing in a specific measurement system.

85+, for data processing in a calibration or correction of measurement system.

108+, for data processing in a testing system.

SEE OR SEARCH CLASS:

73, Measuring and Testing, appropriate subclasses, for measuring and testing apparatus or processes not found elsewhere.

324, Electricity: Measuring and Testing, appropriate subclasses for measuring or testing electricity, per se.

356, Optics: Measuring and Testing, appropriate subclasses.

358, Facsimile and Static Presentation Processing, subclass 504 for measuring, testing, and calibration of natural color facsimile.

368, Horology: Time Measuring Systems or Devices, appropriate subclasses.

374, Thermal Measuring and Testing, appropriate subclasses.

128 Article count or size distribution:

This subclass is indented under subclass 127. Subject matter comprising means for grouping items based on determined quantity or proportionate dimensions of the items.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclass 865.5 for particle size measuring and testing.

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 10 for particle counting, per se.

129 Quantitative determination by weight:
This subclass is indented under subclass 128. Subject matter wherein the quantity of the items in a group is determined by correlating individual weight of the item and gross weight of the group.

SEE OR SEARCH THIS CLASS, SUBCLASS:
101+, for calibration or correction of a weighing system.
173+, for a generic measurement system to determine weight.

SEE OR SEARCH CLASS:
177, Weighing Scales, subclasses 25.11+ for computerized weighing scales.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 305 for specific application of weight responsive control systems.

130 Temperature measuring system:
This subclass is indented under subclass 127. Subject matter comprising means for measuring a thermal quantity.

SEE OR SEARCH THIS CLASS, SUBCLASS:
99, for calibration or correction of temperature measurement.

SEE OR SEARCH CLASS:
374, Thermal Measuring and Testing, subclasses 100+ for temperature measurement (e.g., thermometer), particularly subclasses 141+ for temperature measurement combined with a diverse art device.
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 276 through 278 for HVAC control and subclasses 299 and 300 for specific application of temperature responsive control systems.

131 Body temperature:
This subclass is indented under subclass 130. Subject matter wherein the thermal quantity is the temperature of a body of an animal or a human.

SEE OR SEARCH CLASS:
128, Surgery, subclasses 474 and 549 for diagnostic testing including temperature detection that does not involve significant data processing.

132 Thermal protection:
This subclass is indented under subclass 130. Subject matter comprising means for preventing a device (e.g., engine, machine, heating element, electronic device etc.) from an overheating or over-temperature condition.

(1) Note. The over-temperature condition might include, for example, an unsafe operating temperature.

SEE OR SEARCH CLASS:
361, Electricity: Electrical Systems and Devices, subclasses 1+ for safety and protection of systems and devices.

133 By resistive means
This subclass is indented under subclass 130. Subject matter wherein means for measuring thermal quantity comprises an electrical resistance which varies as a function of the measured thermal quantities.

SEE OR SEARCH THIS CLASS, SUBCLASS:
7, for well logging or borehole having a resistivity logging tool.
47, for flow metering having a pressure, resistive, or capacity sensor.
53, for fluid measurement having a resistive sensor.

134 By radiant energy:
This subclass is indented under subclass 130. Subject matter comprising means for measuring emitted or reflected radiation of a substance or an object for conversion to indication of its temperature.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8, for well logging or borehole by radiation.

28, for molecular structure or composition determination using radiant energy.

40, for flaw or defect detection by radiant energy.

49, for flow metering using radiant energy.

172, for thickness or width measurement system using radiant energy.

SEE OR SEARCH CLASS:

250, Radiant Energy, appropriate subclasses for a radiant energy apparatus and method, per se.

135 Infrared:

This subclass is indented under subclass 134. Subject matter wherein the radiation is in a wavelength region of infrared.

136 Thermal related property:

This subclass is indented under subclass 130. Subject matter comprising means for determining a parameter that is mathematically related to temperature (e.g., thermal conductivity, heat capacity).

SEE OR SEARCH CLASS:

374, Thermal Measuring and Testing, subclasses 29+ for heat flux measurement, and subclasses 43+ for determination of inherent thermal properties (e.g., heat flow coefficient).

137 Density:

This subclass is indented under subclass 127. Subject matter comprising means for determining density of an object or substance.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 32+ for specific gravity or density of a solid or liquid.

138 Pressure:

This subclass is indented under subclass 127. Subject matter comprising means for measuring force per unit area.

SEE OR SEARCH THIS CLASS, SUBCLASS:

98, for calibration or correction of a pressure measurement system.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclass 37 for measuring and testing utilizing fluid pressure, and subclasses 700+ for a fluid pressure gauge.

700, Data Processing: Generic Control Systems or Specific Applications, subclass 301 for a specific application of pressure responsive control system.

139 Exerted on or by a living body:

This subclass is indented under subclass 138. Subject matter wherein the force per unit area applied to or by a living body is measured.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 379.01+ for measuring and testing muscular force (e.g., strength testing, exercising, or training effort, etc.).

128, Surgery, subclasses 481+ for cardiovascular diagnostic testing apparatus having means for measuring resistance or pressure that does not involve significant data processing, and subclasses 587+ for measuring an anatomical characteristic or force applied to or exerted by body that does not involve significant data processing.

140 Within an enclosure:

This subclass is indented under subclass 138. Subject matter wherein pressure within a closed container is measured.

141 Accelerometer:

This subclass is indented under subclass 127. Subject matter comprising means for determining a signal representative of a rate of change of velocity of an object with respect to time.

SEE OR SEARCH THIS CLASS, SUBCLASS:

142, for a speed measurement system.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 488+ for speed, velocity, or acceleration measuring and testing.
324, Electricity: Measuring and Testing, subclass 162 for electrically measuring acceleration.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 302 for specific application of positional responsive control system and subclass 304 for specific application of speed responsive control system.

142 Speed:
This subclass is indented under subclass 127. Subject matter comprising means for determining a change in a rate of motion of an object with respect to time.

SEE OR SEARCH THIS CLASS, SUBCLASS:
141, for an acceleration or deceleration measurement system.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 488+ for speed, velocity, or acceleration measuring and testing.
324, Electricity: Measuring and Testing, subclass 160 for electrical speed measuring.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 302 for specific application of positional responsive control system and subclass 304 for specific application of speed responsive control system.

143 By radar or sonar:
This subclass is indented under subclass 142. Subject matter comprising means for transmitting a signal within radar frequency bands or sound waves and means for determining speed using a reflected signal or waves.

SEE OR SEARCH THIS CLASS, SUBCLASS:
39, for flaw or defect detection by sound energy.
48, for flow metering by acoustic energy.
54, for fluid measurement by vibration or acoustic sensor.
103, for calibration or correction of an acoustic measuring system.

SEE OR SEARCH CLASS:
342, Communications: Directive Radio Wave Systems And Devices (e.g., Radar, Radio Navigation), subclasses 104+ for velocity determination.
367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 89+ for speed determination echo system.

144 Of aircraft:
This subclass is indented under subclass 142. Subject matter wherein speed (e.g., longitudinal, lateral, vertical speed, etc.) of an aircraft is determined.

SEE OR SEARCH CLASS:
244, Aeronautics and Astronautics, appropriate subclasses for spacecraft or aircraft.
701, Data Processing: Vehicles, Navigation, and Relative Location, subclasses 7+ for air speed or velocity measurement of an aeronautical vehicle, and subclass 121 for speed control for traffic analysis or control of aircraft.

145 Rotational speed:
This subclass is indented under subclass 142. Subject matter wherein speed of a rotating member (wheel, shaft, disk, etc.) is determined.

146 Averaging performed:
This subclass is indented under subclass 145. Subject matter wherein a mathematical operation is performed to obtain an average speed or associated time signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
199, for a generic averaging operation on a measured signal.

SEE OR SEARCH CLASS:
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 445 and 805 for performing an averaging function in an electric digital

calculating computer and in an electric analog calculating computer, respectively.

147 Specific mathematical operation performed:
This subclass is indented under subclass 145. Subject matter including details of an algorithm having a sequence of calculating steps to be carried out for determining rotational speed or related parameter.

SEE OR SEARCH THIS CLASS, SUBCLASS:
146, for an averaging operation performed on a speed or associated time signal.
179+, for statistical measurement.
194+, for noise removal or extraction in a measured signal by mathematical attenuation.
196+, for signal extraction or separation using matrix operations.
199, for a generic averaging operation on a measured signal.

SEE OR SEARCH CLASS:
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 200 through 714 and 801-854 for a specialized function performed in an electric digital calculating computer and in an electric analog calculating computer, respectively.

148 For wheel speed:
This subclass is indented under subclass 147. Subject matter wherein the algorithm includes processing of a wheel speed signal.

(1) Note. This subclass includes a vehicle speed measuring apparatus having a sensor for producing pulses in response to the rotation of vehicular wheel.

SEE OR SEARCH CLASS:
701, Data Processing: Vehicles, Navigation, and Relative Location, subclasses 70+ for vehicle indication or control of braking acceleration or deceleration, subclasses 93+ for vehicle speed control, and subclasses 20+ for railway vehicle speed control.

149 By distance and time measurement:
This subclass is indented under subclass 142. Subject matter including means for timing a moving object which travels a measured or predetermined distance to determine a speed signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
89, for calibration or correction of a timing measurement system.
125, for timing signal generation.
158+, for a linear distance or length measurement system.
163+, for a rotary distance or length measurement system.
176+, for a time measurement system.
187, for history logging or time stamping.

150 Orientation or position:
This subclass is indented under subclass 127. Subject matter comprising means for measuring a spatial relationship of an object with respect to a reference axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:
92+, for calibration or correction of a directional measurement system.
94+, for calibration or correction of a positional measurement system.
155+, for dimensional determination.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, appropriate subclasses, particularly subclasses 300+ for an indicator of direction of force transversing natural media.
356, Optics: Measuring and Testing, subclasses 138+ for angle measuring or angular axial alignment and subclasses 399+ for alignment in lateral direction.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 302 for a specific application of positional responsive control system.

151 Angular position:
This subclass is indented under subclass 150. Subject matter wherein the object resides along the arc of a circle.

SEE OR SEARCH THIS CLASS, SUBCLASS:
154, for inclinometer.

152 3D position:
This subclass is indented under subclass 150. Subject matter comprising means for determining X-Y-Z coordinates of an object.

153 3D orientation:
This subclass is indented under subclass 152. Subject matter comprising means for determining the movement of the object in a three-dimensional space.

154 Inclinometer:
This subclass is indented under subclass 150. Subject matter comprising means for determining an inclination of a surface from horizontal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
151, for angular position determination.

155 Dimensional determination:
This subclass is indented under subclass 127. Subject matter comprising means for determining or calculating a geometrical measurement representing a relationship between points, angles, surfaces, or solids**.**

SEE OR SEARCH THIS CLASS, SUBCLASS:
94+, for calibration or correction of a positional measurement system.
150+, for orientation or position determination.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, appropriate subclasses for related subject matter.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 303 for specific application of dimensional responsive control system.

156 Area or volume:
This subclass is indented under subclass 155. Subject matter comprising means for determining a total surface measurement enclosed within a set of lines or a cubic capacity of a three dimensional figure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
55, for liquid level or volume determination.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, appropriate subclasses for related subject matter, particularly subclasses 121+ for area integrators.
700, Data Processing: Generic Control Systems or Specific Applications, subclass 281 for control of fluid level or volume and subclass 303 for specific application of dimensional responsive control system.

157 Radius or diameter:
This subclass is indented under subclass 155. Subject matter comprising means for determining radius or diameter of a circular object or sphere.

158 Linear distance or length:
This subclass is indented under subclass 155. Subject matter wherein the geometrical measurement is a displacement or a distance between two points or two planes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
86, for linearization of measurement.
97, for calibration or correction of a length, distance, or thickness measurement system.
163+, for a system to measure rotary distance or length.
166, for a system to measure height or depth.
170, for a system to measure thickness or width.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclasses 700+ for distance measuring.

159 By reflected signal (i.e., ultrasonic, light, laser):
This subclass is indented under subclass 158. Subject matter wherein the displacement or distance is measured from a returned wave of a target signal.

SEE OR SEARCH CLASS:

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 118+ for distance determination using a directive radio wave system and device.

356, Optics: Measuring and Testing, subclasses 3+ for range or remote distance finding using an optical system.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 99+ for distance or direction finding using an echo system.

160 Pedometer:

This subclass is indented under subclass 158. Subject matter comprising means for recording distance travelled by a walker by responding to the movement of the walker at each step.

SEE OR SEARCH CLASS:

235, Registers, subclass 105 for pedometers.

161 Electronic ruler:

This subclass is indented under subclass 158. Subject matter comprising a scale marked off in units (e.g., inches) and slider assembly for measuring the linear distance or length.

162 Micrometer

This subclass is indented under subclass 158. Subject matter comprising an instrument adapted for measuring minute distances with high accuracy.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, subclasses 813+ for distance measuring by a micrometer.

163 Rotary distance or length:

This subclass is indented under subclass 158. Subject matter of ... comprising a rotary encoding means for generating pulses representing a measured distance or length.

SEE OR SEARCH THIS CLASS, SUBCLASS:

97, for calibration or correction of a length, distance, or thickness measurement system.

158+, for a system to measure linear distance or length.

166, for a system to measure height or depth.

170, for a system to measure thickness or width.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, subclasses 700+ for distance measuring.

164 Electronic tape measure:

This subclass is indented under subclass 163. Subject matter wherein the rotary encoding means comprises an extensible tape member electrically operated to indicate the measured distance or length.

165 Odometer:

This subclass is indented under subclass 163. Subject matter wherein the measured distance or length represents an odometer reading on a vehicle.

SEE OR SEARCH CLASS:

235, Registers, subclasses 95+ for odometers.

701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 7 for air speed or velocity measurement.

166 Height or depth:

This subclass is indented under subclass 155. Subject matter wherein the geometrical measurement is a vertically measured distance between a reference base and something above or below it.

SEE OR SEARCH THIS CLASS, SUBCLASS:

97, for calibration or correction of a length, distance, or thickness measurement system.

158+, for a system to measure linear distance or length.

163+, for a system to measure rotary distance or length.

170, for a system to measure thickness or width.

SEE OR SEARCH CLASS:

33, Geometrical Instruments, subclass 719 for sound-type depth indication.

167 Contouring:
This subclass is indented under subclass 155. Subject matter wherein the geometrical measurement includes profile information representing structure or shape or outline of a surface or body or figure.

(1) Note. This subclass includes coordinate or non-contact measuring apparatus or methods.

168 By probe (e.g., contact):
This subclass is indented under subclass 167. Subject matter wherein the profile information is measured by a probe which makes contact with the surface, body, or figure.

169 Center of gravity:
This subclass is indented under subclass 167. Subject matter including means for determining a position of center of gravity of the surface, body, or figure.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 65.01+ for measuring and testing of center of gravity, turning moment, and metacentric height.
701, Data Processing: Vehicles, Navigation, and Relative Location, subclass 124 for a computer application to determine balance or center of gravity (e.g., load distribution of vehicle).

170 Thickness or width:
This subclass is indented under subclass 155. Subject matter wherein the geometrical measurement is thickness or width.

SEE OR SEARCH THIS CLASS, SUBCLASS:
97, for calibration or correction of a length, distance, or thickness measurement system.
158+, for a system to measure linear distance or length.
163+, for a system to measure rotary distance or length.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 559.01+ for photocell systems which detect web, strand, strip, or sheet materials.
356, Optics: Measuring and Testing, subclasses 429+ for monitoring of webs.

171 By ultrasonic:
This subclass is indented under subclass 170. Subject matter wherein the thickness or width is determined by detected ultrasonic waves.

SEE OR SEARCH THIS CLASS, SUBCLASS:
48, for acoustic flow metering.
54, for fluid measurement having a vibration or acoustic sensor.
159, for linear distance or length determination by a reflected ultrasonic signal.

172 By radiant energy (e.g., X-ray, light):
This subclass is indented under subclass 170. Subject matter wherein the thickness or width is determined by detecting an incident or reflected radiation beam (e.g., X-ray, light etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:
8, for well logging or borehole study by radiation.
28, for molecular structure or composition determination using radiant energy.
40, for flaw or defect detection by radiant energy.
49, for flow metering using radiant energy.
134+, for a temperature measuring system using radiant energy.

SEE OR SEARCH CLASS:
250, Radiant Energy, appropriate subclasses.

173 Weight:
This subclass is indented under subclass 127. Subject matter comprising means for measuring the force an object exerts due to gravity.

SEE OR SEARCH THIS CLASS, SUBCLASS:
101+, for calibration or correction of weighing system.

SEE OR SEARCH CLASS:
177, Weighing Scales, subclasses 25.11+ for computerized weighing devices.

700, Data Processing: Generic Control Systems or Specific Applications, subclass 305 for specific application of weight responsive control systems.

174 Payload:
This subclass is indented under subclass 173. Subject matter wherein the object is a carried article.

175 Of moving article:
This subclass is indented under subclass 173. Subject matter wherein the object is in motion.

176 Time duration or rate:
Subject matter under 127 comprising means for measuring and evaluating time information of a period during which an event occurs, or a quantity of counted events per unit time.

SEE OR SEARCH THIS CLASS, SUBCLASS:
79, for a system to measure a time-related parameter in an electrical signal.
89, for calibration of a timer or correction of a timing-related error in the measurement data.
125, for a testing system in which a signal is generated for system timing purposes.
187, for history logging or time stamping.

SEE OR SEARCH CLASS:
368, Horology: Time Measuring Systems and Devices, subclasses 89+ for time interval measuring.

177 Due time monitoring (e.g., medication clock, maintenance interval):
This subclass is indented under subclass 176. Subject matter comprising a schedule maintaining means for reminding a user of a due time of a specific operation.

178 Timekeeping (clock, calendar, stopwatch):
This subclass is indented under subclass 176. Subject matter comprising a time information keeping means for denoting time information such as hour, date, start, or stop instances of an event.

SEE OR SEARCH CLASS:
368, Horology: Time Measuring Systems and Devices, appropriate subclasses, particularly subclasses 250+ for electrical time signalling means.

179 Statistical measurement:
This subclass is indented under subclass 127. Subject matter including means for gathering or measuring or calculating parameters (e.g., mean, deviation, variance, range etc.) using principles of statistics.

SEE OR SEARCH THIS CLASS, SUBCLASS:
194+, for noise removal or extraction in a measured signal by mathematical attenuation.
196+, for signal extraction or separation in a measured signal using matrix operation.
199, for a generic averaging operation performed on a measured signal.

180 Histogram distribution:
This subclass is indented under subclass 179. Subject matter comprising means for providing a profile representing a set-of-occurrences of the parameters in a space, time, or frequency domain.

SEE OR SEARCH THIS CLASS, SUBCLASS:
187, for history logging or time stamping.

181 Probability determination:
This subclass is indented under subclass 179. Subject matter comprising a percentile estimating means for determining a chance that a given event is likely to occur.

182 Performance or efficiency evaluation:
This subclass is indented under subclass 127. Subject matter including means for monitoring or determining an ability to perform or a degree of effective operation of a device or process.

SEE OR SEARCH THIS CLASS, SUBCLASS:
81+, for quality evaluation.

SEE OR SEARCH CLASS:
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 174 through 178 for performance monitoring of machining systems.

183 Diagnostic analysis:
This subclass is indented under subclass 182. Subject matter including means for monitoring or determining operation parameter to perform diagnosis of an abnormal operational condition or fault on the device or the process.

(1) Note. This subclass includes a self-diagnosis device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
58+, for electrical fault detection.
63, for battery monitoring.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 500+ for fault detecting in electrical circuits or electric components.
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 292 through 294 for system protection in a power generation or distribution system.
714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for reliability, availability and computer related fault handling.

184 Maintenance:
This subclass is indented under subclass 183. Subject matter comprising means for preserving or sustaining the process or device from the abnormal operation condition or fault (e.g., repairing, adjusting, etc.).

185 Cause or fault identification:
Subject matter under 183 including means to determine a possible source or a specific fault statement of the abnormal operation condition or fault.

(1) Note. The specific fault statement includes, for example, conditional conclusion, nature or location, comparative result, or state of fault.

186 Computer or peripheral benchmarking:
This subclass is indented under subclass 182. Subject matter including means for determining performance or efficiency of computer or its peripheral.

SEE OR SEARCH CLASS:
714, Error Detection/Correction and Fault Detection/Recovery, subclasses 5+ for fault recovery of a memory or a peripheral subsystem of a computer, subclasses 40+ for a computer component dependent technique for fault locating, and subclasses 718+ for memory testing.

187 History logging or time stamping:
This subclass is indented under subclass 127. Subject matter including means for gathering and recording successive data associated with an event with or without correlating time-tags.

(1) Note. The successive data may include measurements of an occurring phenomenon, status, or instruction information.

SEE OR SEARCH THIS CLASS, SUBCLASS:
79, for a system to measure a time-related parameter in an electrical signal.
89, for calibration of a timer or correction of a timing-related error in the measurement data.
125, for a testing system in which a signal is generated for system timing purposes.
176+, for a time duration or rate measurement system.
180, for histogram distribution in a statistical measurement system.

SEE OR SEARCH CLASS:
346, Recorders, appropriate subclasses for recorders, per se.
347, Incremental Printing of Symbolic Information, appropriate subclasses for ink jet, electric, thermal, or optical recording apparatus or methods.

188 Remote supervisory monitoring:
This subclass is indented under subclass 127. Subject matter including gathering and transferring means for measuring or sensing data from a remote site and for transmitting the data to a central supervisory facility for further analysis.

SEE OR SEARCH THIS CLASS, SUBCLASS:
62, for power logging including communication means.
122, for a testing system including specific communication means.

SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 3.1 through 3.9 for selective monitoring and control communication systems, subclasses 853.1-856.4 for wellbore telemetering or control (e.g., subsurface tool guidance, data transfer, etc.), and subclasses 870.01-870.44 for continuously variable indicating (e.g., telemetering).
700, Data Processing: Generic Control Systems or Specific Applications, subclasses 9 and 10 for supervisory control in a data processing control system.

189 Measured signal processing:
This subclass is indented under subclass 127. Subject matter comprising means for post-processing a measured signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
32, for specific signal processing in a chemical analysis system.

190 Signal extraction or separation (e.g., filtering):
This subclass is indented under subclass 189. Subject matter comprising means for obtaining a particular signal of interest from an incoming input signal by subjecting the incoming input signal to a specific separating technique (e.g., filtering) or means for dividing an incoming input signal into at least two signals of interest.

SEE OR SEARCH THIS CLASS, SUBCLASS:
17, for filtering or noise reduction in seismic prospecting.
69, for a system to measure signal quality in a waveform.
70, for waveform extraction.
106, for signal frequency or phase correction.
107, for circuit tuning.
124+, for signal generation or waveform shaping in a testing system.

SEE OR SEARCH CLASS:
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 300 through 323 for digital filtering and subclass 819 for analog filtering.

191 For noise removal or suppression:
This subclass is indented under subclass 190. Subject matter comprising means for eliminating or reducing a distortion signal contained in the incoming input signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
17, for filtering or noise reduction in a seismic prospecting system.
69, for an electrical signal measuring system for measuring distortion or signal to noise ratio without means for treating the noise signal.
111, for a testing system having noise signal stimulus.

192 In video or image signal:
This subclass is indented under subclass 191. Subject matter wherein the incoming signal contains picture information.

SEE OR SEARCH THIS CLASS, SUBCLASS:
37, for flaw or defect detection by video imaging.

SEE OR SEARCH CLASS:
348, Television, subclasses 607+ for noise or undesired signal reduction, and particularly subclasses 609+ for reduction of cross talk in a television signal.

382, Image Analysis, subclasses 254+ for image enhancement or restoration.
386, Television Signal Processing for Dynamic Recording or Reproducing, subclass 22 for crosstalk reduction in a color television signal, and subclasses 76 and 114+ for noise reduction in a special reproducing and in a black and white television signal.

193 By threshold comparison:
This subclass is indented under subclass 191. Subject matter wherein means for eliminating or reducing the distortion signal includes means for comparing the incoming signal with a reference limit set value.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 77+ for specific signal discriminating without subsequent control by comparing an input signal to a single fixed reference.

194 By mathematical attenuation (e.g., weighting, averaging):
This subclass is indented under subclass 191. Subject matter wherein means for eliminating or reducing the distortion signal includes means for performing at least one algebraic mathematical operation (adding, multiplying, subtracting, interpolation, weighting, averaging etc.) on the incoming signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
179, for a statistical measurement system.
196+, for signal extraction or separation in a measured signal using matrix operation.
199, for a generic averaging operation performed on a measured signal.

SEE OR SEARCH CLASS:
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 200 through 714 and 801-854 for a specialized function performed in an electric digital calculating computer and in an electric analog calculating computer, respectively.

195 Subtracting noise component:
This subclass is indented under subclass 194. Subject matter comprising at least a subtracter for eliminating or reducing a noise component in the incoming signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
17, for filtering or noise reduction in a seismic prospecting system.
111, for a testing system having noise signal stimulus.

196 Using matrix operation:
This subclass is indented under subclass 190. Subject matter comprising means for performing a mathematical operation on a rectangular array representing values associated with the incoming signal for extracting or separating the signal of interest.

SEE OR SEARCH THIS CLASS, SUBCLASS:
126, for signal conversion in a testing system.

197 Having multiple filtering stages:
This subclass is indented under subclass 196. Subject matter including a cascaded filtering means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
17, for filtering or noise reduction in a seismic prospecting system.
69, for a system to measure signal quality in a waveform.
70, for waveform extraction.
107, for circuit tuning.

198 Measurement conversion processing (e.g., true-to-RMS value):
This subclass is indented under subclass 189. Subject matter comprising means for converting measurement value from one measuring unit to another measuring unit.

SEE OR SEARCH THIS CLASS, SUBCLASS:
126, for signal conversion in a testing system.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 100+ for signal converting, shaping, or generating.

199 Averaging:
This subclass is indented under subclass 189. Subject matter comprising means for determining a mean value of measured quantities.

SEE OR SEARCH THIS CLASS, SUBCLASS:
146, for an averaging operation performed on a rotational speed signal.
194, for noise removal or suppression by mathematical attenuation (e.g., weighting, averaging).

SEE OR SEARCH CLASS:
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 445 and 805 for performing an averaging function in an electric digital calculating computer and in an electric analog calculating computer, respectively.

FOREIGN ART COLLECTIONS

The definitions for FOR 100-FOR 173 below correspond to the definitions of the abolished subclasses under Class 364 from which these collections were formed. See the Foreign Art Collection schedule for specific correspondences. [**Note:** The titles and definitions for *indented* art collections include all the details of the one(s) that are hierarchically superior.]

FOR 100 Earth sciences (e.g., weather):
Foreign art collections wherein the data processing system or calculating computer is designed for or utilized in the study of the earth and/or its related sciences.

FOR 101 Seismology:
Foreign art collections wherein a vibrational signal from the earth is detected.

FOR 102 Well logging:
Foreign art collections wherein a signal is emitted by a transducer in a bore hole.

FOR 103 Electrical/electronic engineering:
Foreign art collections wherein the data processing system or calculating computer is designed for use in the fields of electricity and electronics or for the solution of a problem in this area.

FOR 104 Measuring and testing:
Foreign art collections wherein the area of electrical/electronic engineering is measuring or testing of for an electrical circuit, component, parameter, or value.

FOR 105 Impedance:
Foreign art collections wherein the area includes the measuring or testing of or for the opposition a circuit offers to the flow of current.

FOR 106 Voltage, current, or power:
Foreign art collections wherein the area includes the measuring or testing of or for voltage, current, or power.

FOR 107 Frequency:
Foreign art collections wherein the area includes the measuring or testing of at least one frequency of a waveform.

FOR 108 Frequency spectrum:
Foreign art collections wherein the waveform is complex and the frequency spectrum is determined or analyzed.

FOR 109 Pulse:
Foreign art collections wherein the area includes measuring and testing of or for a value or parameter of the variation of a quantity characterized by a rise and decay of a finite duration.

FOR 110 Waveform:
Foreign art collections wherein the area includes measuring and testing of or for a value or parameter of the shape of an electromagnetic wave.

FOR 111 Power generation or distribution:
Foreign art collections wherein the area of electrical/electronic engineering is the generation of electrical power or the distribution of electrical power through networks.

FOR 112 Economic dispatching:

Foreign art collections wherein the area of power generation or distribution is the most economic manner of generating or distributing.

FOR 113 Turbine or generator control:
Foreign art collections including the control of either a prime mover or a generator.

FOR 114 With model:
Foreign art collections including the use of an electrical or mathematical model of the system.

FOR 115 Chemical and engineering sciences:
Foreign art collections wherein the data processing system or calculating computer is designed for use in chemistry, chemical engineering, or other areas of engineering not provided elsewhere or for the solution of problems in these areas.

FOR 116 Chemical analysis:
Foreign art collections wherein the area is the chemical analysis of a product or substance or element.

FOR 117 Spectrum analysis (composition):
Foreign art collections wherein the chemical analysis is the analysis of substances or bodies through study of their spectra.

FOR 118 Chemical property:
Foreign art collections wherein the chemical analysis is the analysis of substances or bodies through study of their chemical composition.

FOR 119 Chemical process control:
Foreign art collections wherein the area is the control of a process of or having to do with manufacturing compositions of matter or elements.

FOR 120 Distillation:
Foreign art collections wherein the chemical process includes the process of first heating a mixture to separate more volatile from the less volatile parts, and the cooling and condensing the resulting vapor so as to produce a more nearly pure or refined substance.

FOR 121 Physical mixing or separation:
Foreign art collections wherein the chemical process includes the process of mixing two or more substances or the separation of one or more substance.

FOR 122 Kilns:
Foreign art collections wherein the chemical process includes a furnace or oven for drying, burning, or baking a substance or body.

FOR 123 Mechanical and civil engineering:
Foreign art collections wherein the data processing system or calculating computer is designed for use in the science concerning the motion of and action of forces on bodies and the design, construction, operation, and care of mechanical processes or items or highways, bridges, tunnels, waterworks, harbors, etc., or for the solution of a problem in these areas.

FOR 124 Measuring or testing:
Foreign art collections wherein the area of mechanical and civil engineering is measuring or testing of or for a process, device, or object.

FOR 125 Flaw or defect:
Foreign art collections for determining the existence or amount of flaw or defect.

FOR 126 Stress, strain, or vibration:
Foreign art collections wherein the measuring or testing is to determine the existence or amount of stress, strain, or vibration.

FOR 127 Fluid:
Foreign art collections wherein the measuring or testing is done on a fluid.

FOR 128 Fluid flow:
Foreign art collections wherein the quantity tested or measured is flow of a fluid.

FOR 129 Power:
Foreign art collections wherein the measuring or testing is to determine existence or amount of power other than electrical power, e.g., mechanical horse power.

FOR 130 Physics:
Foreign art collections wherein the data processing system or calculating computer is designed for or utilized in the science deal-

ing with the properties, changes, interactions, etc., of matter and energy or for the solution of a problem in this area.

FOR 131 Optics or photography:
Foreign art collections wherein the area of physics is that concerned with the nature and properties of light, vision, or producing images upon a photosensitive surface by the chemical action of light or other radiant energy.

FOR 132 Color analysis:
Foreign art collections wherein the area is the analysis of light spectra.

FOR 133 Atomic or nuclear physics:
Foreign art collections wherein a data processing system or a calculating computer is utilized in the study of subatomic particles.

FOR 134 MEASURING, TESTING, OR MONITORING:
Foreign art collections wherein the data processing system or calculating computer is designed for or utilized in the indication of a condition relating to a measurement, analysis, or continuous detection.

FOR 135 Measuring and evaluating (e.g., performance):
Foreign art collections wherein there is a detection of a quantity over a period and assessment of the quantity detected.

FOR 136 Of machine tool:
Foreign art collections including subject matter which measures and evaluates a machine-driven implement, per se.

FOR 137 Quality control determinations:
Foreign art collections related to procedures, inspections, examinations, and tests required during procurement, production, receipt, storage, and issue that are necessary to provide the user with an item of the required quality.

FOR 138 Transfer function evaluation:
Foreign art collections including subject matter for assessment of the relationship between physical conditions at two different points in time or space in a given system which may also describe the role played by the intervening time or space.

FOR 139 Statistical data (e.g., stochastic variable):
Foreign art collections including subject matter for assessment of events, occurring randomly or by chance.

FOR 140 Particle count, distribution, size:
Foreign art collections including subject matter for the enumeration of particles and the evaluation of the properties of particles such as size, spatial dispersion, etc.

FOR 141 For basic measurements:
Foreign art collections including subject matter for fundamental measurements.

FOR 142 Temperature:
Foreign art collections including subject matter for measuring thermal quantities.

FOR 143 Pressure or density:
Foreign art collections including subject matter for measuring the force per unit area or mass per unit volume of a substance.

FOR 144 Orientation:
Foreign art collections including subject matter for measuring the spatial relationship of an object with respect to a reference axis.

FOR 145 Dimension:
Foreign art collections including subject matter for evaluating a measurement.

FOR 146 Distance:
Foreign art collections wherein the measurement is the distance between two or more points.

FOR 147 Length or height:
Foreign art collections wherein the measurement is made along a straight line which contains the points.

FOR 148 Width or thickness:
Foreign art collections wherein the points lie in a line generally perpendicular to a reference surface.

FOR 149 Area or volume:

Foreign art collections wherein the linear measurement is the product of a plurality of dimensions.

FOR 150 Rate of change of dimension (e.g., speed):
Foreign art collections for evaluating the rate of change per unit of time of a given dimension.

FOR 151 Acceleration and further derivatives:
Foreign art collections for evaluating the second or higher order derivatives of the function of dimension with respect to time.

FOR 152 Weight:
Foreign art collections for measuring the force an object exerts due to gravity.

FOR 153 Basis weight:
Foreign art collections for evaluating the weight per unit area.

FOR 154 Time or time intervals:
Foreign art collections for evaluating one or more periods of duration or the duration between given events.

FOR 155 Operations performed:
Foreign art collections where there is significant recitation of the particular manner in which the measuring, testing, or monitoring is accomplished.

FOR 156 Calibration or compensation:
Foreign art collections for determining the accuracy or operating characteristics of a measuring device or producing true measurement data from initial measurement data.

FOR 157 Having mathematical operation on initial measurement data:
Foreign art collections in which the true measurement data is derived from a mathematical function on the initial measurement data.

FOR 158 Including environmental factors (e.g., temperature):
Foreign art collections where ambient data is utilized to compensate initial data.

FOR 159 Including predetermined stored data:
Foreign art collections where data previously stored in a memory is included.

FOR 160 Using difference involving initial measurement data:
Foreign art collections where the offset between two successive initial measurements or an initial measurement and a standard is utilized to a compensate initial data.

FOR 161 Using analog calculating elements:
Foreign art collections where the true measurement data is generated by elements having nondiscrete input and output values.

FOR 162 By table look-up:
Foreign art collections in which the initial measurement data is used in a specified manner to obtain the true measurement data previously stored in a memory.

FOR 163 Using operator provided data:
Foreign art collections where manually provided data is used in generating or deriving the true measurement data.

FOR 164 Filtering:
Foreign art collections wherein the operation performed is the selection or removal of signal or data components in accordance with specified criteria.

FOR 165 Linearization:
Foreign art collections wherein the operation performed is establishing a first degree relationship between two variables.

FOR 166 Noise reduction:
Foreign art collections wherein the operation performed is the lessening of the effects of any disturbance tending to interfere with the normal operation of the system.

FOR 167 Averaging:
Foreign art collections wherein the operation performed is determining a single value (mean, mode, median) that summarizes or represents the general significance of a set of unequal values.

FOR 168 Fourier analysis:
Foreign art collections wherein there is a transformation of data between the time

domain or space domain and the frequency domain.

FOR 169 Interpolation/extrapolation:
Foreign art collections wherein there is an estimation of a value of a variable between or beyond two known values.

FOR 170 With control of testing or measuring apparatus:
Foreign art collections including subject matter with control of the testing, measuring, or monitoring apparatus.

FOR 171 Programmed testing conditions:
Foreign art collections wherein the testing, measuring, or monitoring is done under the control of a sequence of instructions.

FOR 172 Weighting:
Foreign art collections wherein the operation performed is the artificial adjustment of measurements in order to account for factors which would differ during normal use of a device from the conditions during measurement.

FOR 173 Normalization:
Foreign art collections wherein the operation performed is the transforming of signals to a common basis.

END